

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of	:	Customer Number: 53080
	:	
Tetsuya HAYASHI, et al.	:	Confirmation Number: 9484
	:	
Application No.: 10/576,421	:	Tech Center Art Unit: 1795
	:	
Filed: April 19, 2006	:	Examiner: Rademaker, Claire L
	:	
For: LITHIUM ION SECONDARY BATTERY AND PRODUCTION METHOD THEREOF	:	

**TRANSMITTAL OF APPEAL BRIEF**

Mail Stop Appeal Brief – Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Submitted herewith is Appellants' Appeal Brief in support of the Notice of Appeal filed June 5, 2009. Please charge the Appeal Brief fee of \$540.00 to Deposit Account 500417.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due under 37 C.F.R. 1.17 and 41.20, and in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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*for Michael E. Fogarty* *Reg No 53,308*  
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**APPEAL BRIEF**

Mail Stop Appeal Brief – Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed June 5, 2009, wherein Appellants appeal from the Primary Examiner's rejection of claims 1-8.

**Real Party In Interest**

This application is assigned to Panasonic Corporation (formerly Matsushita Electric Industrial Co., Ltd.) by assignment recorded on November 21, 2008, at Reel 021897, Frame 0570.

**Related Appeals and Interferences**

To the best of Appellants' and Appellants' representatives' knowledge, there are no related appeals or interferences (see Related Proceedings Appendix).

**Status of Claims**

1. Claims canceled: None
2. Claims withdrawn from consideration, but not canceled: None
3. Claims pending: 1-8
4. Claims allowed: None
5. Claims rejected: 1-8
6. Claims on appeal: 1-8

**Status of Amendments**

No amendments to the claims have been made after the Final Rejection issued on January 6, 2009 final Office Action.

**Summary of Claimed Subject Matter**

Independent claim 1 recite a lithium ion secondary battery including an electrode group that comprises:

(1) a winding core, (Spec. ¶ 13)

(2) a positive electrode comprising a positive electrode core member and a positive electrode active material layer carried on said positive electrode core member, (Spec. ¶ 13)

(3) a negative electrode comprising a negative electrode core member and a negative electrode active material layer carried on said negative electrode core member, (Spec. ¶ 13) and

(4) a porous film formed on at least one of said positive electrode and said negative electrode, (Spec. ¶ 13)

wherein said porous film comprises a filler and a binder, (Spec. ¶ 13)

said positive electrode and said negative electrode are wound around said winding core, (Spec. ¶ 13) and

said positive electrode and/or said negative electrode have/has, on the initial winding side, a region where said active material layer is carried on neither side of said core member and an adjoining region where said active material layer is carried on only one side of said core member. (Spec. ¶ 13)

Independent claim 5 recites a method for producing a lithium ion secondary battery, comprising the steps of:

(a) forming a positive electrode active material layer on both sides of a positive electrode core member, to obtain a positive electrode, (Spec. ¶ 17)

(b) forming a negative electrode active material layer on both sides of a negative electrode core member, to obtain a negative electrode, (Spec. ¶ 17)

(c) forming a porous film that comprises a filler and a binder on a surface of said positive electrode and/or said negative electrode, (Spec. ¶ 17) and

(d) winding said positive electrode and said negative electrode around a winding core, to obtain an electrode group, (Spec. ¶ 17)

wherein said step (a) and/or said step (b) comprise/comprises the step of providing, on the initial winding side of said positive electrode and/or said negative electrode, a region where said active material layer is carried on neither side of said core member and an adjoining region where said active material layer is carried on only one side of said core member. (Spec. ¶ 17)

**Grounds of Rejection To Be Reviewed By Appeal**

I. Claims 1, 3-5 and 7-8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mizutani (US 2003/0180605) in view of Reichert et al. (USP No. 6,217,623) and Takayama et al. (JP 09-035738); and

II. Claims 2 and 6 stand rejected as being unpatentable over Mizutani, Reichert and Takayama in further view of Komatsu et al. (US 2002/0146626).

**Argument**

**I. Claims 1, 3-5 and 7-8 are allowable over Mizutani (US 2003/0180605) in view of Reichert et al. (USP No. 6,217,623) and Takayama et al. (JP 09-035738)**

It is alleged that the combination of Mizutani, Reichert and Takayama disclose all of the limitations of claims 1, 3-5 and 7-8 of the present disclosure. Appellants respectfully disagree.

Features of the present disclosure are a lithium ion secondary battery having a winding core, a porous film comprised of a filler and a binder formed on at least one of a positive electrode and a negative electrode, and a region where an active material layer is carried on neither side of a core member and an adjoining region where an active material layer is carried on only one side of the core member. As a result of these features, it is possible to effectively avoid breakage or falling off of the active material layer or the porous film near the edge of the electrode.

As is admitted in the January 6, 2009 final Office Action, Mizutani fails to disclose a winding core. Takayama is alleged to remedy this deficiency. However, it is respectfully submitted that the rejection is improper, as there is no valid basis to make the proposed combination.

The stated objective in the Abstract of Mizutani is that useless parts which have no contribution to power generation are reduced in order to provide a non-aqueous electrolyte battery which has a high energy density. To achieve this objective, Mizutani teaches a positive electrode disposed on one face of a separator extending from one end to about the center portion of the separator, and a negative electrode extending on the other side of the separator from the other end to about the center region. Then the separator, having the positive and negative electrodes applied thereon, is wound around the approximate center with a jig, which is then removed to form an electrode assembly (see, paragraph [0013] and Figs. 1 and 7 of Mizutani). Thus, the electrode assembly does not require a winding core composed of a wound end of the separator or a winding core material provided in the approximate

center part. While Takayama teaches a winding core, one skilled in the art would not be motivated to combine the winding core of Takayama with the battery of Mizutani, because the winding core is a useless part that does not contribute to power generation. Addition of a winding core to the battery of Mizutani would reduce energy density. Thus, the combination of Takayama and Mizutani is improper. Moreover, Reichert is not relied upon to teach a winding core.

Furthermore, it is admitted that Mizutani fails to disclose a porous film that comprises a filler and a binder. It is alleged that Reichert remedies this deficiency.

As discussed above, in Mizutani, a separator, being a long sheet, has a positive and negative electrode applied thereon, and then wound about a jig to form the cell. However, Reichert performs the opposite. As is indicated in the Office Action, Reichert allegedly teaches a porous film layer comprised of a filler and binder that is sprayed directly onto the positive electrode and/or negative electrode. It is alleged that it would be obvious to use such a film as disclosed in Reichert with the battery of Mizutani to increase the ease of manufacture and to reduce self-discharge of the cell. However, as is clear from these descriptions, it would be impossible to spray the porous film of Reichert **before** the formation of the positive and negative electrode, because before formation of them, there is no surface on which to spray the porous film. The order in which Mizutani and Reichert form their cells is contrary and opposite to each other.

In addition, in the present disclosure, since the porous film is formed of filler and binder, it would not be possible to roll up the porous film and electrode combination of the present disclosure around a jig such as in Mizutani, without causing cracks in the film, because the winding around the jig is much tighter than the winding core. As such, it is clear that the separator of Mizutani cannot be simply substituted with the porous film of the present disclosure or Reichert.

Furthermore, if a porous film containing a filler and a binder is used, such as in Reichert, the porous film can only be formed on one or the other of the positive and negative electrodes. In other words, the positive and negative electrodes cannot be disposed on both faces of one porous film because the film is sprayed on the electrodes, not the electrodes are formed on the film.

Moreover, if the porous film of Reichert were used in place of the separator of the wound battery of Mizutani, the battery of Mizutani would be rendered inoperable for its stated purpose of eliminating a component that does not contribute to power generation in order to provide a non-aqueous electrolyte battery which has a high energy density. Furthermore, Takayama is not relied upon to remedy this deficiency. Accordingly, it is clear that the proposed combination of references is not possible to teach either the lithium ion secondary battery or the method thereof for manufacturing said battery as is disclosed in the present application.

As is well known in patent law, if a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). As the porous film disclosed in Reichert and the winding core of Takayama would render the wound battery of Mizutani inoperable for its intended purpose, there is no suggestion or motivation to make the proposed combination of Mizutani with Reichert or Takayama. Accordingly, Appellants respectfully submit that the § 103 rejection of claims 1 and 5 over Reichert, Mizutani and Takayama be withdrawn.



**II. Claims 2 and 6 are allowable over Mizutani, Reichert and Takayama in further view of Komatsu et al. (US 2002/0146626)**


Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplicatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as independent claims 1 and 5 are patentable for the reasons set forth above, it is respectfully submitted that dependent claims 2 and 6 are also in condition for allowance.

**Conclusion**

For all of the foregoing reason, Appellants respectfully submit that the grounds of rejection of the claims on appeal is in error and should be reversed. To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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**CLAIMS APPENDIX**

1. A lithium ion secondary battery including an electrode group that comprises:

(1) a winding core,

(2) a positive electrode comprising a positive electrode core member and a positive electrode active material layer carried on said positive electrode core member,

(3) a negative electrode comprising a negative electrode core member and a negative electrode active material layer carried on said negative electrode core member, and

(4) a porous film formed on at least one of said positive electrode and said negative electrode, wherein said porous film comprises a filler and a binder,

said positive electrode and said negative electrode are wound around said winding core, and

said positive electrode and/or said negative electrode have/has, on the initial winding side, a region where said active material layer is carried on neither side of said core member and an adjoining region where said active material layer is carried on only one side of said core member.

2. The lithium ion secondary battery in accordance with claim 1, wherein a separator is disposed between said positive electrode and said negative electrode.

3. The lithium ion secondary battery in accordance with claim 1, wherein a lead is provided in the region of said positive electrode or said negative electrode where the active material layer is carried on neither side of said core member.

4. The lithium ion secondary battery in accordance with claim 1, wherein on the initial winding side said winding core has a recess at a position where it comes into contact with the starting position of the active material layer of said positive electrode or said negative electrode, and said recess corresponds to at least a part of the thickness of said positive electrode or said negative electrode.

5. A method for producing a lithium ion secondary battery, comprising the steps of:

(a) forming a positive electrode active material layer on both sides of a positive electrode core member, to obtain a positive electrode,

(b) forming a negative electrode active material layer on both sides of a negative electrode core member, to obtain a negative electrode,

(c) forming a porous film that comprises a filler and a binder on a surface of said positive electrode and/or said negative electrode, and

(d) winding said positive electrode and said negative electrode around a winding core, to obtain an electrode group,

wherein said step (a) and/or said step (b) comprise/comprises the step of providing, on the initial winding side of said positive electrode and/or said negative electrode, a region where said active material layer is carried on neither side of said core member and an adjoining region where said active material layer is carried on only one side of said core member.

6. The method for producing a lithium ion secondary battery in accordance with claim 5, wherein said positive electrode and said negative electrode are wound around said winding core with a separator interposed therebetween in said step (d).

7. The method for producing a lithium ion secondary battery in accordance with claim 5, further comprising the step of welding a lead to said region of said positive electrode or said negative electrode where the active material layer is carried on neither side of said core member.

8. The method for producing a lithium ion secondary battery in accordance with claim 5, further comprising the step of, on the initial winding side, providing said winding core with a recess at a position where it comes into contact with the starting position of the active material layer of said positive electrode or said negative electrode, said recess corresponding to at least a part of the thickness of said positive electrode or said negative electrode.

**EVIDENCE APPENDIX**

No evidence was provided during prosecution of this application.

**RELATED PROCEEDINGS APPENDIX**

To the best of Appellants' and Appellants' representatives' knowledge, there are no related appeals or interferences.